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Regional Wastewater Management Plan Guidance for Cape Cod Commission Review of Local Wastewater Management Plans

MARCH 2013



This is a draft document. It is intended to provide municipalities with guidance about how the Cape Cod Commission will approach its regulatory review of local Comprehensive Wastewater Management Plans (CWMPs) in the future. This document will be revised and made available for formal public comment in the future. In the interim, comments about this guidance, or any other aspects of the Cape Cod Regional Wastewater Management Plan (RWMP), may be provided to the Commission via the RWMP web site by clicking on the Feedback Form link, or via email directed to wastewater@capecodcommission.org, or via regular mail at 3225 Main Street/P.O. Box 226, Barnstable, MA 02630.

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Introduction

Under the [Cape Cod Commission Act](#) (Act), Chapter 716 of the Acts of 1989, as amended, the Cape Cod Commission is required to review certain projects as Developments of Regional Impact (DRIs). DRIs are projects that, due to their size or other characteristics, are deemed to present regional impacts.

In Massachusetts, Comprehensive Wastewater Management Plans (CWMPs) often require compliance with the [Massachusetts Environmental Policy Act, MGL c. 30 §60, §61 \(MEPA\)](#) and the implementing regulations [301 CMR 11.00](#). The MEPA review typically results in the filing of an Environmental Notification Form (ENF) and/or an Environmental Impact Report (EIR) with the state MEPA Unit for each CWMP.

Under the Act, the Cape Cod Commission (Commission) is required to review all projects filing an EIR as a DRI. As a result, CWMPs are typically required to file for DRI approval with the Commission.

To date the Commission's DRI review has been based upon compliance with the Minimum Performance Standards (MPS) and goals of the [Cape Cod Regional Policy Plan \(RPP\)](#).

This guidance document provides a more-detailed description of the issue areas that the Commission will include in its DRI review and sets up a framework for consistency review with the [Cape Cod Regional Wastewater Management Plan \(RWMP\)](#). This guidance pertains to Comprehensive Wastewater Management Plans, Integrated Water Resource Management Plans, and similar planning efforts (collectively referred to as "CWMPs") subject to DRI review.

There are 57 identified embayment watersheds on Cape Cod that will eventually have a Total Maximum Daily Load (TMDL) for nutrients. Thirty-two of those 57 embayments are shared among more than one town. Efforts to achieve nutrient removal in those shared watersheds are fundamentally regional in nature. For this reason, this guidance promotes coordination and binding commitments between towns with shared watersheds to nitrogen-sensitive embayments.

This guidance recognizes CWMPs and Targeted Watershed Management Plans (TWMPs). It establishes that CWMPs that are not town-wide and



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do not address all watersheds within the town shall be deemed incomplete. This is to promote a comprehensive approach and coordination between wastewater planning and Local Comprehensive Plans (LCPs), master plans, zoning, and land use controls adopted by a town. However, the guidance recognizes that towns may not have [Massachusetts Estuaries Project \(MEP\)](#) data for the full town, or for other reasons may wish to proceed with planning (and implementation) in phases. For that reason, the guidance allows towns to submit a TWMP for DRI approval and to make those plans eligible for State Revolving Fund (SRF) loans for TWMP wastewater infrastructure.



1. Procedure

Local plans to develop wastewater infrastructure often exceed categorical MEPA thresholds and require the filing of an ENF/EIR. CWMPs are also required by the Massachusetts Department of Environmental Protection (MassDEP) for eligibility for subsidized loans from the State Revolving Fund (SRF). Towns have typically elected a joint review process in which the Cape Cod Commission review is concurrent with the MEPA review. The MEPA review is concluded with a certificate from the Massachusetts Secretary of Energy and Environmental Affairs. The Cape Cod Commission concludes its review after the MEPA certificate is issued, with a Development of Regional Impact (DRI) permit. The DRI permit typically consists of findings and conditions of Commission approval.



2. General Requirements

1. CONSISTENCY WITH THIS GUIDANCE

For the purposes of Commission review this guidance document recognizes two types of local plans:

A. COMPREHENSIVE WASTEWATER MANAGEMENT PLAN (CWMP), COMPREHENSIVE WATER RESOURCES MANAGEMENT PLAN (CWRMP), AND INTEGRATED WATER RESOURCE MANAGEMENT PLAN (IRWMP)

These types of local plans (collectively referred to as “CWMPs”) must include an analysis of all land within the municipal boundary and shall be based upon established TMDLs for all nitrogen-sensitive watersheds within the municipality. Local plans that do not address all watersheds within the municipality shall be deemed incomplete. In the event a municipality is awaiting a Total Maximum Daily Load (TMDL) for one or more watersheds within the municipal boundary, or is otherwise developing a plan that is not town-wide, Targeted Watershed Management Plans, discussed below, may be substituted. As discussed further in Section 3.1 below, local plans in this category shall include Inter-Municipal Agreements (IMAs), Memoranda of Understanding (MOUs), or other legally binding instruments involving all of the towns within each shared watershed.

B. TARGETED WATERSHED MANAGEMENT PLAN (TWMP)

This type of local plan shall apply to all of the land within the specified watershed(s) and shall be based on an established TMDL for the specified watershed(s). The Cape Cod Commission will review and approve TWMPs for the purposes of qualifying such plans (and related, proposed wastewater infrastructure) for SRF eligibility. In shared watersheds, all municipalities with jurisdiction over land within the watershed to nutrient-sensitive embayments shall either (i) be a party to the TWMP and be co-applicants in the DRI process, or (ii) be parties to an IMA, MOU, or other legally



binding instrument involving all of the towns within the shared watershed, as further discussed in Section 3.1 below.

CWMPs and TWMPs are collectively referred to as “Local Plans.”

2. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION WATER RESOURCES MANAGEMENT PLANNING GUIDANCE

MassDEP’s guidance document entitled [Water Resources Management Planning](#) outlines certain phases of CWMP development. Similarly, this guidance document adopts the following phases for CWMP development:

- a. Plan of Study/Scope
- b. Assess Current Conditions
- c. Assess Future Conditions
- d. Needs Analysis/Problem Identification
- e. Alternatives Development
- f. Alternatives Evaluation
- g. Plan Selection
- h. Recommended Plan (preferred alternative)
- i. Public Participation
- j. Schedule and Costs

3. PLAN SCOPE, PLANNING PHASES, AND STATUS

Towns shall submit the Plan of Study (Scope) to Commission staff for a pre-application meeting. This pre-application meeting shall take place prior to the Needs Analysis phase of the Local Plan. Commission staff will offer suggestions on Scope elements that are likely to be important topics in DRI review. Failure of the town to address Commission suggestions will not relieve the town from responsibility for revising the Local Plan prior to DRI approval.

Towns shall submit each draft planning phase report, as identified in Section 2 (a–j) above, to Commission staff for review and comment. Commission staff will complete its review and comment within 30 days of receipt.



4. CONSISTENCY WITH OTHER LOCAL PLANNING EFFORTS

A Local Plan shall be closely coordinated with other local planning efforts. For example, a Local Plan shall be consistent with a town's Local Comprehensive Plan (LCP), Districts of Critical Planning Concern, Growth Incentive Zones, and land use designations adopted as part of a Land Use Vision Map (Economic Centers, Village Centers, Industrial and Service Trade Areas). Where possible, Local Plans shall be closely coordinated with the updating of the LCP and local zoning to achieve both land use and wastewater planning goals. To the extent that there are inconsistencies between wastewater build-out(s) and build-outs conducted for the town's Local Comprehensive Plan or a Growth Incentive Zone, the deviations shall be clearly identified, the reasons for deviation clearly noted, and a timeframe shall be established for coordinating those planning documents.

5. CONSISTENCY WITH THE MINIMUM PERFORMANCE STANDARDS OF THE CAPE COD REGIONAL POLICY PLAN

Local Plans shall be consistent with the Minimum Performance Standards of the [Regional Policy Plan \(RPP\)](#) and with Commission regulations.



3. Shared Watersheds

The Cape Cod Regional Wastewater Management Plan (RWMP) promotes wastewater infrastructure planning on a watershed basis to gain efficiencies in achieving water quality goals, and to identify potential savings from shared approaches to nitrogen control. Watershed-based planning in shared watersheds will require cooperation and commitment among towns with land within their jurisdiction in a shared watershed. There are 32 nitrogen-sensitive embayments for which the watershed is shared between one or more towns (Figure LPG-1).

At a minimum, towns in shared watersheds to nitrogen-sensitive coastal embayments shall include regional conceptual planning options to single-town solutions in the Alternatives Development and Alternatives Evaluation phases of Local Plan development with a goal to clearly identify opportunities to save money and/or speed embayment clean-up.

1. REGIONAL PLANNING MECHANISMS

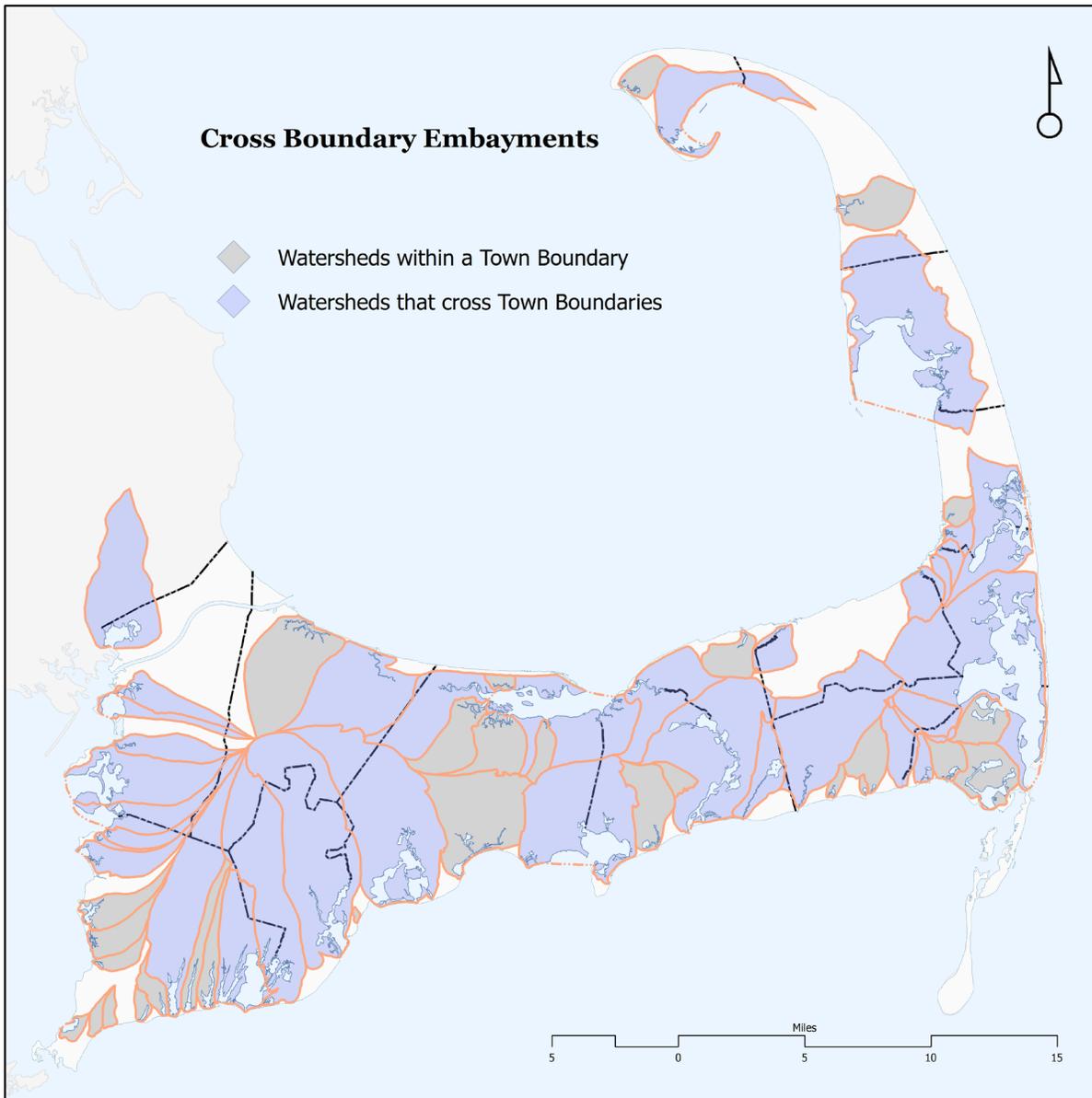
a) Towns located in shared watersheds and holding jurisdiction over lands draining to nitrogen-sensitive embayments shall execute Inter-Municipal Agreement(s) (IMAs) with the other towns in the shared watershed(s), as a required element of a Local Plan submittal to the Commission. It is anticipated that several IMAs may be needed throughout the planning process that become successively more detailed as management plans are formulated, as indicated below:

i. The first IMA(s) should be executed prior to beginning the Needs Assessment. The IMA should include at a minimum recognition of the plan of study and establishment of representation from the other town(s) with liaison to that town's chief administrator. The first IMA shall establish a process for the towns in the shared watershed to collaborate on planning including, but not limited to, joint review of MEP reports and TMDLs, advisory committee meeting membership and meeting notices, discussion of natural systems enhancements and other nitrogen-attenuation options, identification of MEP model runs, creation of joint written records of mutual decisions, and schedules of key points for future coordination.



ii. A second IMA shall be executed after development of Local Plan Needs Analysis/Problem Identification, and prior to the Plan Selection that identifies, at a minimum, the target limit of total nitrogen load from wastewater sources that needs to be eliminated to achieve TMDL (the “Target Nitrogen Load Limit” or “TNLL”); and examines cost-sharing opportunities for expansion of existing infrastructure,

FIGURE LPG-1: Shared Watersheds to Marine Waters





development of shared infrastructure, and other implementation strategies to achieve TMDLs. The IMA may establish a basis for a nutrient-trading program as part of cost sharing. In the event towns cannot agree on a target limit of nitrogen load, TMDL allocation shall be proportional to existing nitrogen load in the shared watershed, adjusted for future development allowed under land use bylaws.

IMA(s) shall be in place with adjacent towns for all shared watersheds. IMAs for shared watershed(s) shall be submitted to the Commission together with the Local Plan for DRI approval. IMAs shall be incorporated into the DRI approval decision and shall be enforceable by the Commission as condition of DRI approval.

Towns shall consult with the Commission during this process. The Commission will provide examples of IMAs and will assist towns in developing these agreements.

b) Towns with jurisdiction over lands within shared watersheds to embayments that have assimilative capacity for nitrogen that are identified in the Local Plan for disposal of treated wastewater effluent shall adopt an IMA identifying, at a minimum, the percentage of assimilative capacity proposed to be consumed by the disposal activity.



4. Needs Analysis/Problem Identification

The Needs Analysis shall identify the wastewater needs to achieve resource protection consistent with the Minimum Performance Standards of the [Cape Cod Regional Policy Plan](#). At a minimum those areas include the following resources and their watersheds: general aquifer protection, drinking water protection, fresh surface waters, and marine waters. Infrastructure to achieve water-quality protection and improvement of these primary resources areas shall comply with the MPS for wastewater and stormwater infrastructure. Wastewater needs should also include community needs for protection of public health, aesthetic conditions, and economic growth. Other areas of the Regional Policy Plan also germane to Local Plans include, but are not limited to, natural resources and open space, archeology, energy, coastal resources and transportation.

1. WASTEWATER NEEDS

Wastewater needs are collectively listed as:

1. Correction or avoidance of unsanitary conditions
2. Protection of public and private water supplies
3. Correction or avoidance of nutrient (both nitrogen and phosphorus) overloading to surface waters
4. Avoidance of inconvenience or unaesthetic conditions (tight tanks, mounded septic systems, etc.)
5. Provision for sustainable economic growth (economic and village center development, industrial and service trade areas, growth incentive zones, affordable housing, etc.)



2. DESCRIPTION OF EXISTING INFRASTRUCTURE

A. WATER SUPPLY

The Local Plan shall identify the location of Drinking Water supplies. The Needs Assessment should present an analysis of water use in the community that addresses annual average, maximum month, and maximum day conditions, and distinguishes between seasonal and year-round properties of both residential and commercial nature.

B. WASTEWATER

The Local Plan shall characterize all existing wastewater infrastructure including wastewater flows for average and maximum month and day conditions; portion of flow attributed to infiltration and inflow; treatment capacity and effluent-disposal capacity; treatment performance; and review of groundwater quality monitoring.

C. STORMWATER

Description of stormwater management activities and characterization of collective stormwater conveyance and treatment and discharges.

3. RESOURCE PROTECTION AND WATER QUALITY IMPROVEMENT

A. DRINKING WATER

This section shall include a review of water quality conditions including nitrogen and volatile organic substances. Water quality conditions related to Compounds of Emerging Concern should be provided where available. Where nitrogen concentrations are in excess of 1 ppm, a nitrogen-loading



estimate shall be conducted for existing and build-out conditions for the wellhead protection area.

B. FRESH SURFACE WATER (PONDS AND LAKES)

This section shall include a characterization from the Cape Cod Pond and Lake Stewardship Program (PALS) water quality data, where available, and include pond monitoring and restoration activities currently undertaken or planned for the future. Depending on the focus of the Local Plan, the Needs Assessment should include recommended pond actions for assessment, protection, and restoration. The determination of wastewater infrastructure needs for pond water quality protection or restoration should be based upon a focused diagnostic study of several years of data.

C. COASTAL EMBAYMENTS

This section shall include a summary of the MEP technical reports and TMDLs, a presentation of nitrogen loading in watersheds for existing conditions and at build-out, and required percent removals. Where more-updated actual flows are used to characterize nitrogen loads, the difference between it and MEP loads shall be identified.

D. WATER QUALITY IMPROVEMENT

This section shall include an estimate of wastewater volumes for each of the wastewater needs areas identified above in Section 4.1, and shall include an estimate of the number of parcels and their associated wastewater flow (current and future) and nitrogen loads where Title 5 systems do not provide for acceptable wastewater management.

4. BUILD-OUT ANALYSIS

During the Needs Assessment phase of the Local Plan, towns estimate current and future development and wastewater flows, and then proceed to determine what portion of those flows should be collected and treated



to meet water quality goals. To determine future flows, a build-out analysis is needed. A build-out analysis estimates the potential growth impacts if a community develops to the extent allowed under current zoning and other local regulations. The Needs Assessment shall include a detailed build-out analysis to provide the basis for estimating future wastewater flows for wastewater management planning.

In general, towns should consider the current pace of development, as well as any other factors that may limit build-out conditions, and develop a Planning Horizon. This will provide the basis for developing the total cost of the project based on this planning horizon. The planning horizon is typically at least 20 years but is not limited to that duration.

The build-out analysis shall include a narrative that describes all assumptions, formulae, and data sets used in the analysis so that a transparent assessment of the analysis can be made. This will include all land use, wastewater, and growth projection assumptions and metadata that describe the year, type, and source of all data sets used. All assumptions made in the build-out process shall be documented and explained, and the narrative shall demonstrate that the assumptions used in the build-out analysis match the body of land use controls in effect, as well as the LCP. Where changes in land use controls are anticipated, the changes shall be identified and explained.

The build-out analysis shall articulate the land use and wastewater flow projections for existing development, at total build-out, and at build-out for the Planning Horizon, for the entire town and by watershed. Wastewater flows should be reported as actual flows for consistency with the zero-percent SRF loan application and also include peak flows for facility design.

In addition to the build-out analysis based on the chosen planning horizon, the build-out analysis shall predict the maximum wastewater flow that could occur under current zoning and land use regulations, including Title 5 (total build-out).

The build-out analysis shall analyze and address all of the following types of growth:

1. New homes on existing vacant lots
2. New homes on lots in future subdivisions
3. Conversions of seasonal homes to year-round use



4. Additional bedrooms on existing homes
5. New apartments
6. New accessory apartments in residential and commercial zones
7. New commercial development on vacant land
8. Expanded commercial operations
9. Redevelopment of land resulting in higher wastewater flow

Prior to completing the Needs Assessment phase of the Local Plan, the town shall prepare preliminary cost estimates to initially judge the financial impacts of its decision on establishing the Planning Horizon flows, using the likely favored solution(s). The cost estimate shall distinguish between the cost for mitigating current wastewater flows, and the cost related to growth under the build-out for the chosen Planning Horizon. Based on those cost estimates, it is recommended that the town review its build-out analysis to consider possible growth restrictions in areas identified for sewerage but not currently identified for future growth. Later stages of the Local Plan should not begin until the town or towns have addressed the potential cost of future growth (including presentation at public meetings) and concluded that the setting of the Planning Horizon flows is consistent with the community's willingness to expend capital for future growth needs.

5. GROWTH MANAGEMENT

It is recommended that towns examine existing land use controls in areas identified for sewerage to determine the extent of potential sewer-induced growth that would result from wastewater infrastructure. Based on this examination, towns should present potential growth impacts of wastewater infrastructure to the public prior to undertaking a detailed alternatives analysis. Certain bylaws and regulations may be adopted to counter the potential for sewer-induced growth. Tools to accomplish this include:

- checkerboard sewer connection systems (see Collection discussion in the [Technology Assessment](#));
- nutrient management bylaws;
- limiting sewer flows to the level allowed under pre-sewer conditions;



- down zoning and up zoning; and
- other land use controls, as described in the report [Sewers and Smart Growth: Challenges, Opportunities and Strategies, dated March, 2009.](#)

A more-detailed discussion of these tools is located in the [Land Use, Wastewater Planning, and Growth Management](#) section.

Towns may wish to obtain zero-percent rate of interest State Revolving Fund loans by demonstrating that their Local Plan and land use controls are “flow neutral.” The Cape Cod Commission plays a role in determining whether Local Plans and land use controls are flow neutral. For further information about the Commission’s consistency review, please see [MassDEP’s guidance document](#) and [Cape Cod Commission Flow Neutral Consistency Guidance](#).



5. Alternatives Development

1. TREATMENT TECHNOLOGY

A Local Plan shall evaluate conventional and non-conventional wastewater management technologies and decentralized and centralized collection and treatment infrastructure, as discussed in the RWMP's Technology Assessment ([conventional technologies](#) and [green technologies and alternative approaches](#)). Conventional wastewater treatment includes Title 5 systems, innovative/alternative on-site septic systems, cluster, satellite, and municipal systems. Green infrastructure includes enhanced natural attenuation through constructed wetlands, dredging tidal restoration, or improvement by other means; innovative technology and management, including permeable reactive barriers and aquaculture; non-discharging systems, including urine diversion and composting toilets; and non-structural options, including fertilizer reduction, landscape design, and stormwater management.

2. COLLECTION SYSTEMS

Potential sewer service areas in watersheds to nitrogen-sensitive embayments shall be identified and characterized with respect to density, seasonality, and availability of natural attenuation, using mapping developed by the town or provided by the Commission. Decentralized options shall be evaluated in low-density areas (areas where customer connections are more than 150 feet apart) where collection costs may be high. The application of various gravity and high- and low-pressure sewer-collection technologies shall be evaluated and compared.



3. TREATMENT AND DISPOSAL SITES

Evaluation of treatment and disposal sites shall be based on the significant differences among the following:

1. Direct-discharge watersheds
2. Nitrogen-sensitive watersheds
3. Water-supply Zones of Contribution
4. Wellhead Protection Areas (Zone IIs) and Interim Wellhead Protection Areas
5. Freshwater pond watersheds

The Local Plan should fully exhaust all options for effluent disposal in direct-discharge areas before considering other locations, even if such sites are distant and/or located in another town.

Sites within direct-discharge watersheds shall always be considered, regardless of town lines. Priority should be given to land owned by municipalities, quasi-municipal entities, and utilities, although certain private entities may be appropriate partners as well. The Commission will assist with identification of these sites and coordinate inter-municipal cooperation in shared watersheds.

The Local Plan shall identify limits of assimilative capacity of a coastal embayment system and the percentage of assimilative capacity that will be consumed due to a proposed location for discharge of treated effluent within that watershed.

If the Local Plan selects disposal sites within nitrogen-sensitive watersheds, the Local Plan shall present the added costs related to expanded collection areas and/or higher levels of wastewater treatment.

A. HYDROGEOLOGIC SITE INVESTIGATION

Towns shall submit a Hydrogeologic Site Investigation scope and coordinate review with Commission staff including:

- Groundwater flow
- Hydraulic conductivity
- Groundwater mounding



- Flow projections to downgradient receptors and impact analysis
- Calculation and allocation of effluent nitrogen loads to receptors
- Hydraulic loading test for infiltration capacity
- Endangered Species Identification/Protection

B. OCEAN OUTFALL

To the extent that a town wishes to consider an ocean outfall as a disposal option, the Local Plan shall demonstrate the clear understanding of the difficult regulatory and legal hurdles this option presents. If an ocean outfall is pursued as a disposal option, the Local Plan shall include a technical feasibility study that addresses, at minimum, the following issues:

- Tides
- Depth
- Sediments
- Benthic surveys
- Fish and fowling habitat
- Modeling of mixing zones
- Documentation of background water quality
- Projection of impacts
- Establishment of a scientific task force
- A monitoring and contingency plan

4. EFFLUENT REUSE

The Local Plan shall address the possibilities for effluent reuse. Options include irrigation of golf courses, athletic fields, utility rights-of-way, and forested land. Reuse options shall be consistent with the [MassDEP Water Reuse Regulation of 2009](#) that identifies three levels of reuse and required level of treatment for each.



5. SEPTAGE MANAGEMENT

The Local Plan shall estimate the expected quantities of residential and commercial septage grease-trap pumping, boat waste from marine pump-out facilities, and liquid sludge from wastewater treatment facilities, and lay out a plan for their appropriate treatment and disposal.



6. Plan Evaluation and Selection

1. TREATMENT

The April 2010 report [Comparison of Costs for Wastewater Management Systems Applicable to Cape Cod](#) shall be used as guidance in determining the level of effort associated with the evaluation of small-scale and large-scale options. The evaluation shall include a fair appraisal of the capital costs and operational costs (including monitoring required for TMDL compliance), as well as a cost-effectiveness comparison that includes the amount of nitrogen removed from nitrogen-sensitive watersheds.

2. COLLECTION

A. WATERSHED MVP (MULTI-VARIANT PLANNER)

Evaluating collection alternatives for TMDL compliance requires the identification of collection areas that are cost effective. This effort can be greatly enhanced through the use of the Commission's Watershed MVP application. Towns shall work with Commission staff to develop alternative collection schemes to identify optimal collection areas. For more information on Watershed MVP and other tools and resources, see the [Tools and Resources](#) section of the RWMP.

B. MASSACHUSETTS ESTUARIES PROJECT SCENARIO REQUESTS

The Cape Cod Commission's Watershed MVP, when available, may be used for first-order analysis of nitrogen control options. The most favorable one or two options for nitrogen control should be submitted to MEP for confirmatory modeling to ensure that the options meet the TMDL. All requests for scenario runs using the MEP linked water-quality model shall be submitted to Commission staff for review and comment prior



to initiating such requests with the School for Marine Science and Technology (SMAST) at the University of Massachusetts–Dartmouth. Commission staff may recommend modifications to scenario runs to include land within the jurisdiction of another town or towns in order to examine options for nutrient controls in shared watersheds, or other appropriate recommendations.

C. EXISTING INFRASTRUCTURE

Towns with existing public and/or private wastewater infrastructure shall identify all options for utilizing this existing infrastructure as part of their recommended plan, including the potential for expansion of existing infrastructure, aggressive inflow and infiltration (I/I) removal, and municipal acquisition of or partnership with private facilities.

D. ALTERNATIVES ANALYSIS

Local Plans shall include comparative information and state the reasons why alternatives were not chosen where appropriate.

Each wastewater treatment option that is evaluated in detail shall be described in terms of its ability to address the needs in each of the categories identified in Section 4.1 above, as well as other categories that may be identified in the Local Plan's Needs Assessment.

The Local Plan shall clearly describe:

- the portion of the existing and proposed infrastructure that will be allocated to each category listed above (i.e., the percent of flows allocated to each category in Section 4.1 above);
- the costs of the recommended plan apportioned to each category listed in Section 4.1 above;
- assimilative capacity apportioned to each category listed in Section 4.1 above;
- the portion of collected flows, existing and proposed, attributed to inflow and infiltration (I/I);



- the percentage of treated effluent, existing and proposed, disposed inside a nitrogen-sensitive watershed and/or inside a Zone of Contribution to a public drinking water supply;
- Estimates of current and future wastewater flows and the portion of those flows that are to be collected to meet nutrient-related needs shall be identified.

E. SHARED FACILITY ANALYSIS

For towns located in any watershed draining to a nitrogen-sensitive embayment, at least one of the wastewater management plans selected for detailed evaluation shall include facilities shared with one or more watershed towns. The Commission shall be consulted on the nature of those options and will assist the town in acquiring data necessary for the evaluation.

F. CONSIDERATION FOR EVALUATIONS

The Commission recommends that towns consider these important considerations for reducing wastewater infrastructure costs:

1. Limit new development in watersheds draining to nitrogen-sensitive embayments.
2. Dispose treated effluent outside of Zone IIs and nitrogen-sensitive watersheds.
3. Identify non-structural options for nutrient reduction such as dredging, inlet widening, etc.
4. Where cluster, satellite, and centralized systems are needed, sewer the most densely populated areas regardless of town lines.
5. Employ adaptive plans to take advantage of new science and to measure ecosystem response.
6. In areas of low-density development, use decentralized systems to avoid high collection costs.
7. Capitalize on natural attenuation from freshwater systems such as pond, rivers, and lakes.
8. Extend the life, and, where appropriate, expand the capacity of existing centralized wastewater treatment systems.
9. Construct multi-town facilities to share capital and operation and maintenance (O&M) costs.



10. Cautiously include wastewater infrastructure capacity for non-nitrogen control needs only after a thorough assessment of needs (see above).
11. Review the life-cycle cost of the options.

G. COMPONENTS OF ALTERNATIVES DEVELOPMENT/ALTERNATIVES EVALUATION PHASE

Local Plans shall include:

1. The total town-wide wastewater flow to be collected and the total number of developed parcels, current and future;
2. The number of residences added per year over the past 10 years;
3. The expected increase in the number of parcels served;
4. The amount of growth assumed for the purposes of planning nutrient control to meet TMDL;
5. Disposal—the amount of future flows to be collected and treated and potentially disposed in (i) a nitrogen-sensitive watershed, (ii) a Zone of Contribution, (iii) a non-sensitive coastal embayment, and (iv) in a direct-discharge watershed.
6. Identify non-nutrient sensitive watersheds that, due to identified growth potential, may become nutrient sensitive if growth management and/or nitrogen controls are not implemented.
7. The amount of future flows associated with parcels with high volumes of water use/wastewater disposal (i.e., hotels, restaurants, laundromats, certain manufacturing operations) and their percentage in relation to the total parcels.
8. Parcels with higher-than-average flows should be identified for nitrogen controls.
9. Redevelopment—the expected flow increase associated with anticipated redevelopment, and the percentage of “redevelopment” flows in relation to the total future flows.
10. Density—the proposed length of collection piping and the associated number of parcels served, for both current and Planning Horizon conditions. Identify small parcels located in high-density areas slated for nitrogen control.
11. The number of on-site denitrifying systems, also expressed as a percentage of the nitrogen-control need expected to be met, current and future.



12. The number of satellite systems (flows between 10,000–300,000 gpd) and cluster systems (flows less than 10,000 gpd), also expressed as a percentage of the nitrogen-control need expected to be met, current and future.
13. The number of on-site Title 5 systems in the town and the planning area, and the number of permits issued annually for the repair and/or the replacement of Title 5 systems.
14. Wastewater flows to be collected, including total annual average flows and summer peak flows (seasonal peaking factor) for current and future conditions.

3. COST ESTIMATE

The Local Plan shall estimate the ultimate cost of the project, using the likely favored solution(s) and conveying the cost to the homeowner. A Local Plan shall consider all avenues for apportioning costs among groups of benefiting parties. These may include, but are not limited to, betterment assessments, property taxes, and watershed-wide fees. The Local Plan shall state the projected costs in the categories of collection, treatment, and disposal, including unit costs (\$/ft, \$/gpd, etc.).

The cost analysis shall distinguish between the cost of managing the current flows and the cost related to growth.

4. PROJECT PHASING

As economically feasible, the implementation plan shall prioritize nitrogen reduction management strategies in subwatersheds for expedited water quality restoration of the head waters of eutrophic embayments.

The implementation plan shall identify all anticipated hurdles that would prevent the recommended plan from being expeditiously carried out, including actions by the town, adjacent towns in shared watersheds, and regulatory agencies. Towns are encouraged to formulate plans that can be implemented in phases, using an adaptive management approach. The implementation plan shall address the wastewater- and nutrient related activities and policies of all town boards and committees and propose means to harmonize them.



7. Adaptive Management

The Local Plan shall include an Adaptive Management Plan that details the plan's implementation, reporting structure, monitoring plan for compliance with TMDLs, and other potential conditions. Items to include are:

- Regular compliance reporting
- Implementation progress reports
- Capital expenditures
 - » Amount sewered
 - » Comparison to TMDL target amounts
 - » Identification of projected expansion areas
 - » Compliance with DRI conditions
- Groundwater discharge permit
- Groundwater monitoring
- Estuarine water quality
- Habitat assessment
- Coordination with neighboring towns
- Progress on non-structural alternatives
- Periodic watershed assessments
- Water supply annual statistical reports
- Changes to the Adaptive Management Plan



8. Public Involvement

Towns shall establish a committee whose primary focus is to facilitate the dissemination of information on the project to all affected parties and provide for effective input from those affected parties. In shared watersheds this committee shall be based on watershed boundaries, and not town boundaries, in order to be inclusive and coordinated. The name of this committee should be clear enough so that all affected parties can identify it with the town's wastewater planning effort.

The scope of work for each phase of the wastewater planning shall include a listing of key topics for public input and a schedule and plan for collecting this input.



9. Implementation

Towns in shared watersheds to nitrogen-sensitive embayments shall ensure joint responsibility for implementation to achieve TMDL via one of the following means, or via other legally enforceable means:

1. LAND USE CONTROLS: DISTRICTS OF CRITICAL PLANNING CONCERN (DCPCS)

Towns may nominate the land within their jurisdiction in the shared watershed to a nitrogen-sensitive embayment as a DCPC (see Sections 10 and 11 of the [Cape Cod Commission Act](#)). The goal of the DCPC will be to ensure that each town achieves its Target Nitrogen Load Limit in order to ensure that the subject embayment meets TMDLs. Any DCPC nomination should include a description of the problems of uncontrolled or inappropriate development in the area and the advantages anticipated from development of the area in a controlled manner; recommendations for guidelines for future development of the district; and a description of the types and classes of development that are not substantially detrimental and therefore may proceed during the moratorium phase of DCPC consideration and adoption. Towns should coordinate with the Commission to develop the rules and regulations for the DCPC to cover the shared watershed. Such rules and regulations may include, but are not limited to sewer regulations, flow-neutral regulations, nutrient-management regulations, board of health regulations, requirements for checkerboarding sewer connections, and wetland-protection regulations. For a full discussion of potential land use controls to address nitrogen controls and growth management, see [Sewers and Smart Growth: Challenges, Opportunities and Strategies, dated March, 2009](#).

2. SHARED WASTEWATER INFRASTRUCTURE

Towns are encouraged to provide joint wastewater infrastructure where it is appropriate to reduce costs and/or improve efficiencies for water quality restoration. The evaluation of regional options should identify those



areas of cooperation that lead to cost savings. Options for authorizing jointly owned infrastructure include, but are not limited to:

1. Joint Services Agreements (JSAs)
Adopted pursuant to [MGL c. 40, sec.4A](#). A JSA should include a cost-sharing method that may take into account Target Nitrogen Load Limits, relative acreage, population, tax base, location near the estuary, and percentage reductions required, as appropriate.
2. Management Districts
(see [Appendix G](#) from [MassDEP's Embayment Restoration and Guidance for Implementation Strategies](#))
3. Independent Water and Sewer Commissions
4. Inter-Municipal Agreement (IMAs)
Adopted pursuant to [MGL c. 40N](#).
5. Establishment of a District pursuant to an Enactment of a Special Act of the Legislature
6. Section 8 of the Home Rule Amendment
(Mass Const. Amend., Article 2, as appearing in Amended Article 89)

3. INTER-MUNICIPAL AGREEMENTS

Inter-Municipal Agreements and other legally enforceable agreements establishing Target Nitrogen Load Limits for each town within a shared watershed that ensures that each town accepts responsibility for its share of nitrogen removal in a timely manner.

